

Summer 2012

The Quarterly Hail

National Weather Service - Hastings, Nebraska

Volume 2, Issue 2

Notes From the Meteorologist In Charge

We are now in what most people think is a weather person's "busy time of year" here at the National Weather Service. We have been fairly busy, but the severe weather has been sporadic, with extended lulls between events. Nonetheless, there have been 12 tornadoes reported in the warning area this year already! Thank goodness, none have caused injuries or death and most have been very focused in the damage they caused.

Since mid-May through early July mark the period of the highest incidence of tornadoes, hail and wind damage in our area, we are urging you to remain ever vigilant for the potential of severe thunderstorms. Many of us are praying for rain, but also asking for it to occur without hail, damaging winds or tornadoes.

Also remember that the period between July and September is normally when the hottest weather occurs. Please keep heat stress in mind when making outdoor plans during hot weather. Think about keeping your loved ones cool and hydrated, but don't forget about your pets. They need to have plenty of water and shelter from the hot sun too. I read a statistic the other day that said almost 40 children a year perish in hot vehicles! This is tragic and so simple to avoid. I wonder how many pets experience fatal trauma from heat stress when they are left in a vehicle on a hot day.

Please continue to be prepared to mitigate the potentially dangerous weather in the warm season. It can be an extremely hazardous time when we venture out into nature. Remember, in general, the safest place to be is in a house when most weather hazards are occurring, whether it is a lightning storm, tornado, hail or in the air conditioning on a hot day.

Stay safe and be weather smart!

Steve Eddy

Meteorologist In Charge, National Weather Service - Hastings, Nebraska

Steven.eddy@noaa.gov

402-462-2127 x642



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Special Points of Interest:

- Find out how this year is setting records across the area.
- Are you ready for the summer heat?
- Learn 5 ways you could become a lightning victim.
- What is a POP?
- Have you "liked" us on Facebook?

2012 - Warmest Start On Record - *Mike Moritz, Warning Coordination Meteorologist*

For the first 152 days of 2012 (January 1 through May 31), several locations in south central Nebraska and north central Kansas have experienced the warmest start for any year on record. The following table depicts the average temperature through May 31:

	Grand Island	Hastings	Kearney	Hebron	Smith Center	Beloit	Greeley	York	Plainville
2012 Average Temp. (F)	48.2°	47.7°	45.9°	48.2°	49.3°	50.6°	44.0°	46.6°	48.7°
"Current" Record Average Temp.	46.9° in 1934	45.4° in 1981	45.3° in 1986	47.1° in 1921	48.7° in 1986	50.4° in 1921	42.8° in 1977	47.7° in 1946	48.9° in 1946
2012 Rank vs. "All-Time Rank"	1 st	1 st	1 st	1 st	1 st	1 st	1 st	3 rd	2 nd
Period of Record	116 years	105 years	111 years	117 years	100 years*	117 years*	59 years*	110 years	98 years

* indicates some data is missing or record not fully complete

Of course, there are still many months to come in 2012, but clearly this has been the warmest or one of the warmest years on record locally, thanks at least in part to the warmest March on record.

In addition, the Climate Prediction Center released the monthly seasonal outlooks for the next 12 months. It appears the warm trend is expected to continue, especially through the first half of the summer. For precipitation, there are equal chances for above, below and near normal precipitation for the summer, due primarily to the lack of any strong indicators for above or below normal outcomes. For a look at all the just released outlooks, go to <http://goo.gl/oaxQ8> (link shortened address).

"Earliest" Spring Freeze Records

Along with the warm start, came a record breaking "last spring freeze" date for some places in south central Nebraska. Both Hastings and Hebron have not had a freeze (32° or less) since early March. For Hastings, it was March 9 (22°) and for Hebron it was March 10 (32°). In both cases, this was about 3 weeks earlier than the previous "earliest last spring freeze", and about 45 days before the annual average last freeze (around April 25 for Hebron and Hastings). For Hastings, the "earliest last freeze" was March 31, 1991 and for Hebron it was April 1, 1924. While not expected, it is not unheard of to reach the freezing mark in late May. In fact, most locations had their latest spring freeze on record on May 29, 1947. For more local frost/freeze information, see this story:

http://www.crh.noaa.gov/gid/?n=springfreeze_2012

Note: All of this record information is considered "unofficial" until certification of the data is done by the National Climatic Data Center. ***Look for an update to this article in the fall newsletter!***



Come See Us!

The Hastings National Weather Service Office will once again be hosting a booth at the 2012 Nebraska State Fair in Grand Island, Nebraska, from [August 24th - September 3rd!](#)

Stay tuned - details will be available in the coming months!

How Does Lightning Form?



The conditions needed to produce lightning have been known for some time. However, exactly how lightning forms has never been verified so there is room for debate. Leading theories focus around separation of electric charge and generation of an electric field within a thunderstorm. Recent studies also indicate that ice, hail, and semi-frozen water drops known as graupel are essential to lightning development. Storms that fail to produce large quantities of ice usually fail to produce much lightning.

Forecasting when and where lightning will strike is not yet possible and most likely never will be. But by educating yourself about lightning and learning some basic safety rules, you, your family, and your friends can avoid needless exposure to the dangers of one of the most capricious and unpredictable forces of nature.

Thunderstorms have very turbulent environments. Strong updrafts and downdrafts occur with regularity and within close proximity to each other. The updrafts transport small liquid water droplets from the lower regions of the storm to heights between 35,000 and 70,000 feet, miles above the freezing level. Meanwhile, downdrafts transport hail and ice from the frozen upper regions of the storm. When these collide, the water droplets freeze and release heat. This heat in turn keeps the surface of the hail and ice slightly warmer than its surrounding environment, and a "soft hail", or "graupel" forms. When this graupel collides with additional water droplets and ice particles, a critical phenomenon occurs: Electrons are sheared off of the ascending particles and collect on the descending particles. Because electrons carry a negative charge, the result is a storm cloud with a negatively charged base and a positively charged top.

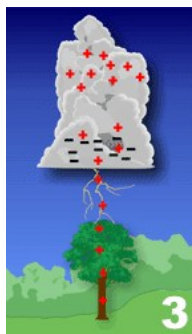


In the world of electricity, opposites attract and insulators inhibit. As positive and negative charges begin to separate within the cloud, an electric field is generated between its top and base. Further separation of these charges into pools of positive and negative regions results in a strengthening of the electric field. However, the atmosphere is a very good insulator that inhibits electric flow, so a tremendous amount of charge has to build up before lightning can occur. When that charge threshold is reached, the strength of the electric field overpowers the atmosphere's insulating properties, and lightning results.



The electric field within the storm is not the only one that develops. Below the negatively charged storm base, positive charge begins to pool within the surface of the earth (see image left). This positive charge will shadow the storm wherever it goes, and is responsible for cloud-to-ground lightning. However, the electric field within the storm is much stronger than the one between the storm base and the earth's surface, so most lightning (~75-80%) occurs within the storm cloud itself.

- ◆ A moving thunderstorm gathers another pool of positively charged particles along the ground that travel with the storm (Image 1). As the differences in charges continue to increase, positively charged particles rise up taller objects such as trees, houses, and telephone poles.



- ◆ A channel of negative charge, called a "stepped leader" will descend from the bottom of the storm toward the ground (Image 2). It is invisible to the human eye, and shoots to the ground in a series of rapid steps, each occurring in less time than it takes to blink your eye. As the negative leader approaches the ground, positive charge collects in the ground and in objects on the ground.

- ◆ This positive charge "reaches" out to the approaching negative charge with its own channel, called a "streamer" (Image 3). When these channels connect, the resulting electrical transfer is what we see as lightning. After the initial lightning stroke, if enough charge is leftover, additional lightning strokes will use the same channel and will give the bolt its flickering appearance.



Lightning Science: 5 Ways To Become A Lightning Victim

It is not always possible to know exactly how a victim has been struck, but here is a list of ways that lightning strikes its victims. Any of these types of strikes can be deadly. Immediate medical attention, including calling 911, starting CPR, and using an AED, may be critically important to keep the person alive until more advanced medical care arrives.

Direct Strike - A person struck directly by lightning becomes a part of the main lightning discharge channel. Most often, direct strikes occur to victims who are in open areas. Direct strikes are not as common as the other ways people are struck by lightning, but they are potentially the most deadly. In most direct strikes, a portion of the current moves along and just over the skin surface (called flashover) and a portion of the current moves through the body--usually through the cardiovascular and/or nervous systems. The heat produced when lightning moves over the skin can produce burns, but the current moving through the body is of greatest concern. While the ability to survive any lightning strike is related to immediate medical attention, the amount of current moving through the body is also a factor.



Lightning strike near Ayr in the 1970s.
Photo courtesy of LaVern Davis.

Side Flash - A side flash (also called a side splash) occurs when lightning strikes a taller object near the victim and a portion of the current jumps from taller object to the victim. In essence, the person acts as a “short circuit” for some of the energy in the lightning discharge. Side flashes generally occur when the victim is within a foot or two of the object that is struck. Most often, side flash victims have taken shelter under a tree to avoid rain or hail.

Ground Current - When lightning strikes a tree or other object, much of the energy travels outward from the strike in and along the ground surface. This is known as the ground current. Anyone outside near a lightning strike is potentially a victim of ground current. In addition, ground currents can travel in garage floors with conductive materials. Because the ground current affects a much larger area than the other causes of lightning casualties, the ground current causes the most lightning deaths and injuries. Ground current also kills many farm animals. Typically, the lightning enters the body at the contact point closest to the lightning strike, travels through the cardiovascular and/or nervous systems, and exits the body at the contact point farthest from the lightning. The greater the distance between contact points, the greater the potential for death or serious injury. Because large farm animals have a relatively large body-span, ground current from a nearby lightning strike is often fatal to livestock.

Conduction - Lightning can travel long distances in wires or other metal surfaces. Metal does not attract lightning, but it provides a path for the lightning to follow. Most indoor lightning casualties and some outdoor casualties are due to conduction. Whether inside or outside, anyone in contact with anything connected to metal wires, plumbing, or metal surfaces that extend outside is at risk. This includes anything that plugs into an electrical outlet, water faucets and showers, corded phones, and windows and doors.

Streamers - While not as common as the other types of lightning injuries, people caught in “streamers” are at risk of being killed or injured by lightning. Streamers develop as the downward-moving leader approaches the ground. Typically, only one of the streamers makes contact with the leader as it approaches the ground and provides the path for the bright return stroke; however, when the main channel discharges, so do all the other streamers in the area. If a person is part of one of these streamers, they could be killed or injured during the streamer discharge even though the lightning channel was not completed between the cloud and the upward streamer.

More information about lightning and tips on how to stay safe can be found at the site below:

www.lightningsafety.noaa.gov

New email for sending SD card files or requests/information

There are instances where I am out of the office for several days at a time, sometimes weeks even as they make me take vacation. Okay, I was joking when I said they “make me”, but I do take it and that means I won’t see your message until I return. In order for your needs/concerns to be addressed in a timely matter, please use the following email address:

cr.coop-hastings@noaa.gov

Your information will then go to a group of people who will be able to help you or download your data files from the Fischer & Porter Recording gages.

Switching to digital format

With the contract at the Imaging Center ending August 31st, we have been required to create accounts for everyone in the WxCoder online program for observations. This does not mean you need to change anything you are currently doing. For observers that send in their forms at the end of the month, you will continue to do so. We will enter the data online for you. For observers using IV-ROCS, the phone menu-driven system, your observations are automatically ingested into WxCoder, so if you ever decide you would like to use WxCoder, which is an online way to send observations, it will be very easy to make changes to your account.

Severe weather reports

I would like to encourage all of you to call us with your hail, strong winds resulting in damage, and/or tornado reports. Also use the Remarks section on your observation form. This information is extremely important and is used by many individuals. Just give us a call at **800-528-2914**.

Thank you all for your dedication to the Cooperative Observer Program. It is appreciated more than we can ever tell you. Without you, there would be no climate database for the United States, no temperature/precipitation records, no normal high/low temperatures, and many of the other uses your data are used for.

Wishing you all a safe and happy summer!



We are currently seeking Cooperative Weather Observers at Fairmont, Loup City, Central City and Gibbon. Gibbon would be a location for a Fischer-Porter gauge, the other locations would record DAILY high and low temperatures, as well as measure precipitation and snowfall.

Observing is simple and so is reporting your observation via a program accessed through the internet. All you need to get started is the interest, a PC, and internet access, we supply everything else. If you do not have a computer, another way to report your observation is through a menu driven phone system.

This is an excellent opportunity for anyone who is interested in the weather and who has a desire to observe and report weather conditions. We will provide the necessary equipment and training for those interested.

For more information, contact Marla by email (marla.doxey@noaa.gov) or by phone (402) 462-2127 ext. 327

Employee Spotlight - Meteorological Intern Joe Guerrero

I am originally from California and grew up in the Los Angeles area. I was a member of both the track team and football team in high school. I lettered all four years in both sports. As a sophomore, I was a part of the varsity football team that played in the Los Angeles City Championship game which was played at the L.A. Memorial Coliseum. This was the highest achievement a team in L.A. could reach because there wasn't a state championship due to a vast amount of schools in the city. However, it would have been a much better achievement if we had won. I competed in the L.A. City Track and Field events in high school as well.



After high school, I decided to join the military. I was stationed in Oklahoma for nearly my entire enlistment. As a member of the Air Force, I was a Crew Chief for the E-3 Sentry which is an Airborne early Warning And Control Systems or AWACS. Living in Oklahoma is where my interest for weather began. Honestly, my interest began as a fear. I was accustomed to sunny days and nice weather in southern California which was not always the case living in Tornado Alley. For example, I lived approximately one mile from the epicenter of the 1994 Northridge earthquake, but this was nothing compared to the thought of a tornado crushing through my home at the time. With an earthquake, there isn't a sense of suspense because you don't know when they are going to hit. Storms, on the other hand, have a sense of anticipation which built anxiety for me when I first moved to Oklahoma. After asking so many questions and wondering what caused Mother Nature's powerful ways, I decided a career in weather was the right path for me, and my fear quickly turned into a passion. Soon, I was the one chasing the storm, rather than the storm chasing me. After my enlistment was over and I was honorably discharged from the military, I attended college at the University of Oklahoma. I received a bachelor's of science degree in meteorology with a minor in both mathematics and geographic information systems in 2010.

I love my job and feel very blessed to be in the position I am in here at the Hastings Weather Forecast Office. We have an amazing staff and the spectrum of weather across the Central Plains is vast. In other words, this is a great location to be a meteorologist and start a career in the National Weather Service. Outside of work, I still enjoy competing in different sports, and I am a big fan of the Oklahoma Sooners football program. I live with my girlfriend, Tiffany, and two dogs, Norman and Chloe. Norman and Chloe are both Shih Tzu's, and Norman is named after the city in Oklahoma where the university is located. I met Tiffany in 2009 in Norman, Oklahoma. I make an effort to help my community through volunteer work and donations whenever I can. Overall, I am very happy to be in Hastings. Every day I look forward to learning more about the weather and applying this knowledge to the world.

Did You Know?

- Lightning occurs with ALL thunderstorms, and a storm does not have to be severe to create potentially fatal lightning strikes.
- The lightning channel heats rapidly, and this rapid expansion of heated air causes the thunder. Since light travels faster than sound in the atmosphere, the sound will be heard after the lightning. If you see lightning and hear thunder at the same time, that lightning is in your neighborhood!
- Each spark of lightning can reach over five miles in length, soar to temperatures of approximately 50,000 degrees Fahrenheit, and contain 100 million electrical volts.



- There are lightning detection systems in the United States and they monitor an average of 25 million flashes of lightning from the cloud to ground every year.
- Almost all lightning will occur within 10 miles of its parent thunderstorm, but it CAN strike much farther than that.

“Like” Us on Facebook! - *Briona Saltzman, Meteorological Intern*

You have probably seen these words before: “Like” Us on Facebook. These days it seems they are everywhere: television, magazines, radio and billboards. Even your doctor probably has a Facebook page. Facebook has become a worldwide trend with over 900 million users. So what exactly is Facebook?

Facebook is a free social networking website with the sole mission of connecting people. Once registered, a user can connect with numerous people from all over the world. Like email, users can send messages, post photos or comments, or even chat directly with other users. The latest trend on Facebook has been to allow businesses to have pages that post information and connect with their customers.

We have jumped on the Facebook bandwagon. You can find our Facebook page by going to <http://www.Facebook.com/US.NationalWeatherService.Hastings.gov>. On our page, you can look at the latest radar images, severe weather outlook, hazardous weather outlook and the weather story (image depicting the most important weather in the next few days). We also post a variety of different stories and weather information, including photos of our latest outreach events.

It is important to note that Facebook will not become the main channel for NWS products. We will not post warning and watch information to the page, and all of our products will be sent out the normal way including internet, media, and weather radio. Instead, this new page will be a way for us to connect with our fans! We encourage you to post comments and even photos especially of weather related events to our Facebook page. If you have questions, go ahead and ask away! Storm reports are more than welcome on our page, and fans can see other reports across the area as well.

Hopefully this article has peaked your curiosity in our Facebook page. Go ahead and check it out at the link above and make sure to tell us what you think. If there is something that you want to see send us an email at w-gid.webmaster@noaa.gov or comment on our page! Remember, we are constantly updating or adding new information to our Facebook page in order to serve you, our fans, better. So go ahead, log on and we hope that you “Like” us on Facebook!”



To find us on Facebook, you can also click on the button like the one to the left, which is located on the upper left hand portion of our website: <http://www.weather.gov/gid>

We Want to Hear from You!

Want to know how a tornado forms? Are you interested in how a rainbow is made? Or you just want more information about the Christmas Blizzard of 2009? Let us know!!

Every edition of The Quarterly Hail is published for you, our fans and customers. We want to write about things that **YOU** are interested in. Send us an email or drop us a line in the mail and let us know what you would like to see in each edition of The Quarterly Hail. Whether you are a weather fan like us, or just have a few weather questions you want answered, we want to hear from you! In future editions of The Quarterly Hail, we will try to provide articles that reflect the interests of our customers. In each newsletter, we will choose customer questions to answer in the new Frequently Asked Questions section.

Even if you're not sure what you want to see in the newsletter, we appreciate any feedback! Let us know how we are doing. Did we have a typo in the last newsletter? Was the newsletter informative?



Send an email to Michael.Moritz@noaa.gov, write or call:

National Weather Service
6365 Osborne Drive West
Hastings, NE 68901
(402) 462-4287



What Have We Been Up To? - *Briona Saltzman, Meteorological Intern*

The NWS Hastings has been out and about for the past few months. Here are just a few of the events we have recently attended.

March 23, 2012 - Tri-City Storm Hockey Game, Kearney, NE

The NWS Staff set up a booth at the Tri-City Storm hockey game on March 23 in Kearney, Nebraska. Employees from the Weather Service were on site to answer questions and provide safety information regarding the upcoming severe weather season. As March is known for severe weather awareness, NWS Staff members wanted to help educate the public on severe weather safety. A fun filled evening was had by all, and the Tri-City Storm managed to beat the Omaha Lancers 5 to 1.



April 25-26, 2012 - Water Jamboree, Harlan County Lake, Harlan NE



The NWS was also on hand at this year's Water Jamboree near Harlan County Lake. The Jamboree features presentations about the water activities, such as conservation, recreational uses, pollution, and irrigation among many other topics. This event is attended by fifth and



sixth graders from across south central Nebraska and north central Kansas. This year the staff from the NWS Hastings brought an interactive flood model and discussed the water cycle and how to properly measure rain.

May 8, 2012 - Groundwater Festival, Grand Island, NE



The NWS Hastings has had yet another successful year attending the Groundwater Festival in Grand Island, NE. The Groundwater Festival is an event held by the Groundwater Foundation that features numerous presenters

with topics ranging from pollution to groundwater and the water cycle. This event is attended by fourth and fifth graders all across the state. The NWS Hastings was on hand this year with an interactive flood model used to show students the differences in flood runoff.



Would you like us to talk at your event? We would be more than happy to come explain and show you how the weather affects our area. Please contact Mike Moritz either by email (michael.moritz@noaa.gov) or phone (402-462-4287) for more information.

Heat Wave - Can You Recognize A Heat Disorder Symptom?

Sunburn: Redness and pain. In severe cases swelling of skin, blisters, fever, headaches.

First Aid: Ointments for mild cases if blisters appear and do not break. If breaking occurs, apply dry sterile dressing. Serious, extensive cases should be seen by a physician.

Heat Cramps: Painful spasms usually in the muscles of legs and abdomen with heavy sweating.

First Aid: Firm pressure on cramping muscles or gentle massage to relieve spasm. Give sips of water. If nausea occurs, discontinue water.

Heat Exhaustion: Heavy sweating; weakness; cold, pale, clammy skin; thready pulse; fainting and vomiting but may have normal temperature.

First Aid: Get victim out of sun. Once inside, the person should lay down and loosen his or her clothing. Apply cool, wet cloths. Fan or move victim to air conditioned room. Offer sips of water. If nausea occurs, discontinue water. If vomiting continues, seek immediate medical attention.

Heat Stroke (or sunstroke): High body temperature (106° F or higher), hot dry skin, rapid and strong pulse, possible unconsciousness.

First Aid: HEAT STROKE IS A SEVERE MEDICAL EMERGENCY. SUMMON EMERGENCY MEDICAL ASSISTANCE OR GET THE VICTIM TO A HOSPITAL IMMEDIATELY. DELAY CAN BE FATAL.

While waiting for emergency assistance, move the victim to a cooler environment. With extreme caution, reduce body temperature with a cool bath or sponging. Remove clothing, use fans and air conditioners. If temperature rises again, repeat process. Do NOT give fluids. Persons on salt restrictive diets should consult a physician before increasing their salt intake.

For more information contact your local American Red Cross Chapter. Ask to enroll in a first aid course.

For more information about how to prepare for and deal with the summer heat, visit <http://www.weather.gov/om/heat/index.shtml>

	Temperature (°F)																
	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136	
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137		
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137			
55	81	84	86	89	93	97	101	106	112	117	124	130	137				
60	82	84	88	91	95	100	105	110	116	123	129	137					
65	82	85	89	93	98	103	108	114	121	128	136						
70	83	86	90	95	100	105	112	119	126	134							
75	84	88	92	97	103	109	116	124	132								
80	84	89	94	100	106	113	121	129									
85	85	90	96	102	110	117	126	135									
90	86	91	98	105	113	122	131										
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution	Extreme Caution	Danger	Extreme Danger
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The Heat Index, sometimes referred to as the apparent temperature, is given in degrees Fahrenheit. The Heat Index is a measure of how hot it really feels when relative humidity is factored with the actual air temperature.

To find the Heat Index temperature, look at the Heat Index chart to the left. As an example, if the air temperature is 96° F and the relative humidity is 65%, the heat index - or how hot it feels - is 121° F. The Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105° -110° F (depending on local climate) for at least 2 consecutive days.

Did you
Know



Frequently
Asked
Questions

?

What is a POP? (The Probability of Precipitation)



Simply put, when a meteorologist mentions the word POP, they are referring to the expected probability of precipitation (abbreviated POP - and often referred to as the chance of rain or snow). But what exactly does this mean?

If the POP is 40%, will you see rain or snow at your house? Well, not surprisingly, the answer is maybe.

A POP expresses the **confidence** that measurable precipitation (defined as 0.01" of liquid precipitation) will fall at a given location over a specific period time (often a 6-12 hour time frame). So a 40% chance of measurable precipitation also means there is a 60% chance that no measurable precipitation will fall at a given location.

Why such uncertainty? Often times, seemingly subtle differences in the timing and phase of an approaching weather disturbance can result in the difference between a significant rainfall event and little to no rainfall at all!

Additionally, in convective season, this could also represent that while we know there are going to be showers and thunderstorms around, we also know that they will not provide equal coverage across the entire area.

Stated in terms of **confidence**, the following table represents the probabilities of precipitation and their associated descriptors that the National Weather Service uses.

Range of POP	Convective Descriptor (Used for Showers and Thunderstorms)	Non-Convective Descriptor (Used for Rain and Snow)
0-14%	None	None*
15-24%	Isolated	Slight Chance
25-54%	Scattered	Chance
55-74%	Numerous	Likely
75-100%	Widespread	Definite

*With a 0-14% POP, a forecaster may choose to mention drizzle, flurries or sprinkles, if the forecaster does not believe measurable precipitation (defined as 0.01" of liquid precipitation) will occur.

To see an up-to-date chance for rainfall at your specific location, click on our interactive forecast map located near the top of the Hastings NWS webpage.

Lightning Myths vs. Lightning Facts

Myth - In your house, you are 100% safe from lightning.

Fact - A house is a safe place to be during a thunderstorm as long as you avoid anything that conducts electricity. This means staying off anything with cords, wires, or cables, computers, plumbing, metal doors and windows. Windows are hazardous as thunderstorm winds can blow objects into the window, breaking it and causing glass to shatter. In older homes, in rare instances, lightning can come in cracks in the sides of windows.

Myth - The rubber soles of the shoes or rubber tires on a car will protect you from being struck by lightning.

Fact - Rubber-soled shoes and rubber tires provide no protection from lightning. The steel frame of a hard-topped vehicle provides increased protection if you are not touching metal. Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.

This Table Reflects Various Historical Summer Extremes Across The Area...

	Hottest June Temperature On Record	Hottest July Temperature On Record	Hottest August Temperature On Record	Coollest Daytime Max Temperature (June-August)	Highest Daily Rainfall Total (June-August)
Grand Island	108° / 6-15-1946	117° / 7-24-1936	112° / 8-8-1934	49° / 6-4-1945	4.65" / 7-8-1950
Hastings	110° / 6-26-1936	116° / 7-24-1936	111° / 8-23-1943	50° / 6-5-1945	6.09" / 8-31-1969
Kearney	108° / 6-22-1988	114° / 7-24-1936	111° / 8-8-1934	48° / 6-5-1998	5.95" / 6-25-1989
Loup City	107° / 6-16-1946	112° / 7-11-1954	110° / 8-23-1943	46° / 6-4-1998	10.05" / 6-5-1896
Holdrege	110° / 6-15-1946	113° / 7-24-1936	110° / 8-23-1943	46° / 6-5-1998	4.85" / 7-4-2000
Alton KS	114° / 6-26-1936	121° / 7-24-1936	116° / 8-12-1936	50° / 6-5-1998	4.87" / 8-14-1912
Plainville KS	114° / 6-30-1933	116° / 7-24-1936	113° / 8-9-1937	48° / 6-5-1998	4.70" / 6-17-1957

Summer Climate Outlook Detailed Below...

The latest Summer Outlook from the Climate Prediction Center slightly favors above normal temperatures, but assigns equal chances of above normal, below normal, or near normal precipitation to South Central Nebraska and North Central Kansas.

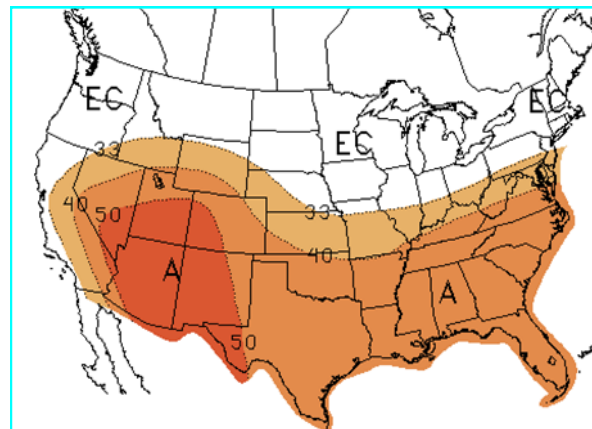
Time Frame: The NWS considers the “Summer” season to be all of June, July and August.

Temperature: The outlook on the right reflects a forecast for the 3-month period as a whole. We tend to view temperatures in the context of a daily or monthly average, but the 3-month outlook accounts for the entire season. **Red/Orange** colors represent “warmer” than normal and **Blue** colors represent “cooler” than normal. The white area labeled “EC” designates regions with Equal Chances of having above, near or below normal temperatures. This means there is no clear trend in the forecast analysis to support one of these outcomes over another. As the image shows, the summer forecast for South Central Nebraska and North Central Kansas is either Equal Chances or slightly favors above normal temperatures. However, the outlook doesn’t indicate *how much* above normal the seasonal temperature might be.

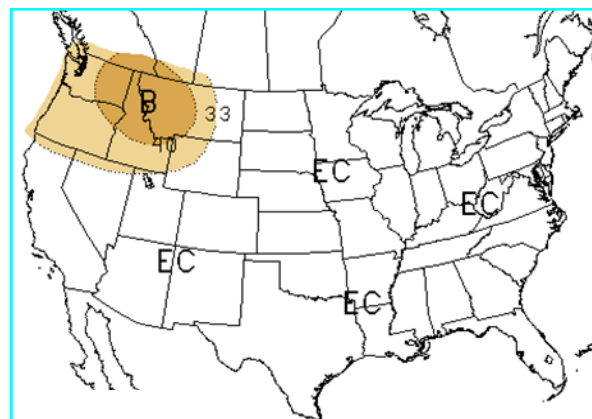
Precipitation: Similar to temperatures, the precipitation outlook depicts the total precipitation for the entire 3-month period, and is independent of individual days or months. **Green** colors represent “wetter” than normal and **brown** colors represent “drier” than normal. The white “Equal Chances” area is also present and covers the majority of the nation, including the local area. This reflects equal chances of experiencing above, near or below normal precipitation. Again, this outlook does not forecast *how much* above (or below) normal precipitation might be.

To recap, the outlook for Summer 2012 (June-July-August) slightly favors above normal temperatures, with equal chances of above, near or below normal precipitation.

**Temperature Outlook for Summer 2012
(June-August)**



**Precipitation Outlook for Summer 2012
(June-August)**



To view these and other Climate Prediction Center outlooks visit <http://www.cpc.ncep.noaa.gov/>

National Weather Service

Weather Forecast Office
6365 Osborne Drive West
Hastings, NE 68901

Phone: 402-462-2127

Website: www.weather.gov/hastings

E-mail: w-gid.webmaster@noaa.gov



Meet the Rest of the Staff at WFO Hastings

Meteorologist-In-Charge

Steve Eddy

Warning Coordination Meteorologist

Mike Moritz

Science and Operations Officer

Rick Ewald

Data Acquisition Program Manager

Marla Doxey

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Mark Fairchild

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Merl Heinlein • Jeremy Wesely

Cindy Fay • Shawn Rossi

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